M1.(a) Methane

1

(b) Sea levels rising

1

(c) Burning of fossil fuels

1

(d) carbon dioxide concentration stayed constant from 1850 to 1900

1

carbon dioxide concentration slowly increased from 1900

1

carbon dioxide concentration increased more rapidly from 1965

allow values from 1965 – 1975

1

[6]

M2. (a) (i) bar drawn between 84 and 86

1

(ii) sulfur dioxide linked to acid rain

1

carbon particles linked to global dimming

1

(b) (i) any **one** from:

- plants / trees <u>absorb</u> (carbon dioxide)
- coal '<u>locks up</u>' (carbon dioxide)

1

(ii) it <u>increases</u> the amount (of CO_2)

1

because carbon in coal (forms carbon dioxide)

accept because carbon / coal burns / reacts <u>with oxygen</u> (to produce CO_2)

1

[6]

M3. (a) crust

ignore Earth's

1

core

ignore inner and/or outer

1

(b) bar chart

1

all heights are correct

accept correctly plotted points

1

all labels are correct for nitrogen, oxygen and other / argon

1

(c) (i) decomposed

1

(ii) global warming

1

[7]

M4. (a) sulfur dioxide / SO_2

allow sulfur oxide

1

(b) global dimming

1

(c) oxygen / O_2

1

(d) (oil is a) limited resource / finite / non-renewable

*accept running out of oil **or** wood is sustainable*

*accept (burning oil) increases amount of carbon dioxide in the atmosphere / global warming **or** releases locked up carbon / global dimming / acid rain*

accept the oil (may become) too expensive

1

(e) carbon dioxide produced (from burning wood)

ignore global warming

1

carbon dioxide used by plants / trees **or** for photosynthesis

if no other mark awarded

*allow carbon emissions used by plants / trees **or** for photosynthesis for **1** mark*

1

[6]

M5. (a) acid rain → sulfur dioxide

1

global warming → carbon dioxide

1

global dimming → carbon particles

1

(b) (i) oxygen

1

(ii) carbon monoxide

1

(c) (i) decreasing

accept running out / none left

1

(ii) any **two** from:

it = coal

- world needs (more) energy
  accept population is increasing
  allow (greater) demand for coal / fuels / energy
- plentiful supply
  accept readily available
  allow coal will 'last longer'
- (many) countries have coal
- easy to find / extract
- oil / gas is running out

accept need to use less oil / gas
accept need to use it to replace oil / gas

- cheap **or** cheaper than oil

2

[8]

M6. (a) curve of best fit drawn through

or close to all of the points

1

(b) (i) 313

1

(ii) 1989 +/– 1

1

(c) concentration / amount of carbon dioxide has <u>increased</u>

1

recently the rate of increase is <u>increasing</u>

1

[5]

M7. (a) (i) sulfur dioxide / SO_2

1

(ii) global dimming

1

(iii) carbon dioxide / CO_2

ignore ozone

1

increases the levels (of carbon dioxide)

*accept it is a greenhouse gas **or** causes global warming / greenhouse effect*

1

(b) gas / oil bar <u>correct length</u>

1

coal bar <u>correct length</u>

1

[6]

M8. (a) hydrogen

ignore formulae

1

(b) any **two** from:

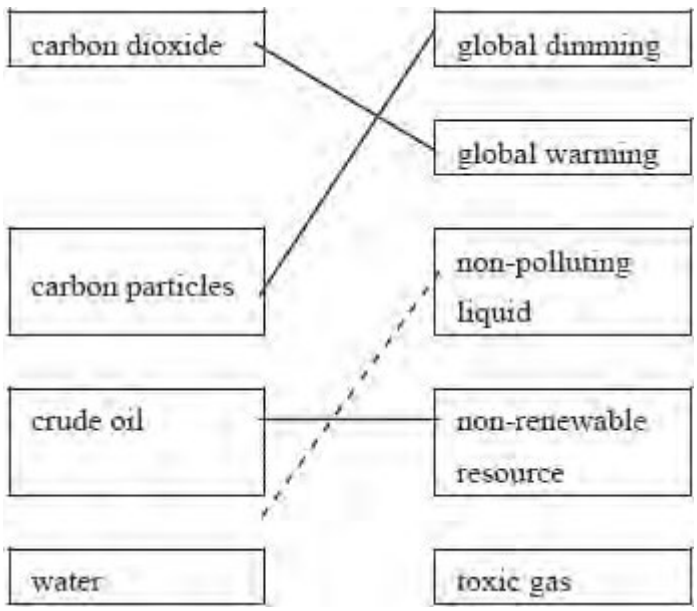
- different sized molecules / more or less (carbon) atoms (in molecules)

  ignore different densities

- fuels have <u>different</u> boiling points
- fuels condense at <u>different</u> temperatures

2

(c)



*all three correct = **3** marks*

*two correct = **2** marks*

*one correct = **1** mark*

3

[6]

M9. (a) respiration

combustion

__1__ mark each

2

(b) methane

water

__1__ mark each
accept steam
do __not__ accept natural gas for methane
do __not__ accept hydrogen oxide

2

(c) greenhouse effect (increased)

accept (global) warming
accept polar ice caps melt
accept rising sea levels
accept problems with climatic change
do __not__ accept changes to the weather __or__ acid rain

1

[5]